Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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Letters from Readers of "Industrial Finishing"

The names and addresses of firms or individuals whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor.

Casket Handle Finish

There has recently been introduced in the casket trade a finish resembling enamel, but it is chip-proof and very durable. Pastel shades are available in the material in question. We desire to obtain the material and would like to know where we can buy it.—R. Casket Co.

Striping Tool

We wonder if you can help us out and inform us where we can obtain a hand striping brush (evidently a mechanical striping tool). We note from time to time you have several ads in the paper describing exactly what we want. Somehow or other we have mislaid same, but what we are interested in securing is a small unit with a reservoir, so we can stripe small objects with lacquer.—S. J. Co. (Pyroxylin Products).

Coatings for Fabrics

Under the above title, we read with interest the following excerpts from a letter, in February, 1935, issue of your magazine, page 4:

"We have several of these, dependent upon the requirements at hand, from a simple waterproof type to thoroughly oil and grease-proof, and which particularly apply to treating paper.—Pickering Laboratories, Inc."

Will you please ask them to send us at once samples, literature, prices and other helpful information which will allow us to intelligently consider this product in certain operations of our process of paper conversion? We would like to have the samples and data promptly, and if they travel a man through this territory, we would be glad to see him.—B. T. N. (A Group of Paper Mills in Massachusetts).

Venetian Blind Finishes and Equipment

We have read with great interest the article on "Finishing Venetian Blinds" in your December, 1934, issue, by R. J. Fairburn of the Zapon-Brevolite Lacquer Co.

Will you please ask the manufacturers of the Synthetic Enamel to send us full information regarding their product, and if possible, include in their first letter prices for direct importation?

We would also like to get in touch with the manufacturers of a roller equipment for small production, such as described in one of your more recent issues.

In short, we are up against it with the problem of painting the slats in our blind department, and are very anxious to receive all possible information about it.—A. y R., Mexico, D. F.

Fire Resistant Paint for School Bus Floors

The Indiana State School Bus Committee, set up by House Bill No. 57 of our recent legislative session, is requiring that floors in all school buses used in Indiana be finished with a fireproof or fire-resistant type of paint. We have inquired about such a paint of the representatives of several paint firms, but as yet, have been unable to locate anyone who can supply it. Do you know

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SOFT, PLEASING AND APPEALING

PASTEL SHADES

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Furniture

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STANDARD SHADES — YELLOW, GREEN, ORCHID, BLUE, OLD ROSE

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whether any such paint is being manufactured, and if so, from whom it can be purchased?—G. Body Works (Custom-Built Commercial Bodies).

Colored Aluminum

I am very much interested in the subject of sheet aluminum alloys which have been colored in the sheet and which later are pierced, blanked and formed without destruction of this finished surface. On the occasion of my last stay in Hendersonville, some Indianapolis firm which was then advertising in INDUSTRIAL FINISHING magazine sent me, either at my request or yours, samples of the sheet stock, and also samples which had been subjected to press operations. I will appreciate it if you can put that same firm in touch with me here, asking them to send me samples of material and processed parts, because the subject is one of special interest at this time.—G. T. D. (Industrial Engineer now serving a Hardware Manufacturer).

EDITOR'S NOTE—A feature article about "The Alumilite Process" of applying clear and brightly colored finishes onto sheet and cast aluminum was published in February, 1932, issue of INDUSTRIAL FINISHING, pages 12, 13 and 14. The author, R. E. Pettit, was a chemical engineer with Aluminum Colors, Inc., which has since been removed from Indianapolis and absorbed by the Aluminum Co. of America.

Bluing Range Tops

You have inserted under the heading "Letters from Readers of INDUSTRIAL FINISHING" (April, page 4) an item covering the bluing of range tops. You undoubtedly will receive a number of answers on this, giving various methods of doing this work. If it is not asking too much, we would appreciate receiving copies of the worth while items, as we are very much interested in this subject ourselves.—W. T. Co. (Stoves, Ranges, Safes).

Luminous Paint

We have read with interest the article in the April issue of INDUSTRIAL FINISHING magazine (page 44) regarding a new luminous paint that is non-poisonous. It may be possible that this particular type of material would be adaptable to various items that we regularly manufacture, and we would appreciate any additional information you may desire to offer.

We manufacture an extensive line of jewelry gift items such as powder boxes, vanity cases, dresser sets, desk clocks, etc., and approximately 95% of our entire line is finished with some form of enamel or lacquer.—J. X. D. Co. (Watch Cases).

EDITOR'S NOTE—To this and to several other inquiries for the same material: "Dialux" is a product of the Grobet File Corp. of America, 3 Park Place, New York, N. Y.

Paint Testing Panels

We are interested in getting some small panels for paint testing, 2 or 3-in. wide, and 5 or 6-in. long, made of some close textured wood, such as gum or poplar, with rounded edges. Do you know of anyone who makes a stock proposition of this?—V. S. Co. (Varnishes, Baking Enamels).

Bleaching Color From Wood

Enclosed find a sample of ash; we are desirous of finding a process of bleaching the brown wood back to white. You will notice the sample is partly white or sap wood, while the balance is brown or heart wood. If there is any material or method which will accomplish this result, kindly let us know.—L. M. Co. (Wood Products).

In your May, 1934, issue you have, on page 49, an article about a bleacher. Please advise me where to get this product. Also, I am interested in getting the names of the materials referred to in an article by F. W. Worth in your issue of November, 1934, page 33.—D. T. Co. (Fine Furniture Painting & Decorating).

EDITOR'S NOTE—A number of good bleaching materials are on the market, and in letters replying to the above inquiries we are listing the names of the manufacturers of these materials.

Application of Flock

We understand from the Binks Mfg. Co. that you have published, or intend to publish, an article on the application of flock. If this article has already appeared, we will appreciate your sending us a reprint, or a copy of the issue of INDUSTRIAL

(Continued on page 43)

» » Cleaning Metal Refrigerator Parts

by M. M. Miller

THERE IS probably no metal product that requires greater care in surface preparation, previous to painting, than do metal refrigerators. Furniture, sporting goods, toys and many other similar products can well leave off in their preparatory processes where the cleaning of refrigerator parts practically begins. This is occasioned by the fact that few of these other products must withstand such severe conditions. A refrigerator finish is subjected to great differences in temperature, high humidity and water condensation; it must have high resistance to discoloration, grease and chipping.

It is no exaggeration to say that the biggest single item in the success of a refrigerator finish is proper cleaning of the metal. To have the metal in proper condition for painting, it must be entirely free from rust and oil. The surface must be neutralized; that is it must be non-alkaline and non-acid, with the exception of certain weak acids which have a definite purpose.

Materials and Methods for Cleaning

Some of the common methods of cleaning metal include the use of solvents of a type similar to gasoline or naphtha, or commercial cleaners or detergents of which there are some very good ones on the market.

Another method is to dip the metal into a hot solution of some alkali, and then rinse it in one or more hot water solutions to thoroughly remove all traces of the alkali bath.

Still another method is known as the Vapor Degreasing method, wherein the metal is inserted into a tank over a bath of boiling chemical. Chemical vapors attack the oils and greases on the steel and carry them away in the form of a condensate, leaving the metal perfectly dry. The chemical vapors, being heavier than air, do not go beyond the confines of the tank; upon reaching the top surface of the tank and coming in contact with the outside air, they condense and fall back into the tank.

Of late, a number of refrigerator plants have added an acid method of cleaning which is used in addition to the above mentioned methods. This method consists of wiping an acid (usually phosphoric with some cleaners added) entirely over the surface of the metal and then wiping off until thoroughly dry. The purpose of this acid wash is to fully neutralize any alkalinity that may be left on the metal, such as certain salts

of the metal, at the same time slightly etching the metal and tending to neutralize invisible areas of rust.

Another process consists of Bonderizing. In this method, the metal, cleaned of oil, is dipped into the Bonderite solution which cleans it and deposits a light coating on the metal surface. The treated metal is rinsed in hot water and then dipped into a mild acid bath, after which it is dried and is then ready for painting. One advantage of this method is that the coating can be readily seen; the workmen can easily determine whether the metal has really been cleaned.

Which Method Is Best?

I have often heard plant executives declare that they couldn't see any difference between cleaning metal by one method or another, and so long as they were unable to prove the superiority of one method over another, they would use what they had and not consider a change. This stand is fatal for anyone to take if he desires a good finish for metal refrigerators.

Many simple tests will quickly show the superiority of one method over another. One way of testing is to have panels of uniform size cleaned by the various methods, and then all finished alike. The panels should then be scratched to the bare metal so that the test may be accelerated. Testing can be made by inserting them in a pan of boiling water, or by hanging them in the vapors over a pan of boiling water, or by inserting the panels in a brine solution, or by out-door exposure.

I have seen cases where, although the metal surface of each panel was thoroughly cleaned, as far as could be seen or tested with a clean handkerchief, the various methods of cleaning produced remarkable variations in durability.

The finishing material may be the best that can be purchased, but its life is entirely dependent upon its bond to the metal surface.

Another thing I have observed in cleaning metal with solvents, such as naphtha or gasoline, is that it is well to use a wad of fine steel wool as a sponge.

Use Rubber Gloves to Handle Cleaned Metal

After the metal has gone through this wet cleaning process, and is in such condition that it may be handled with bare hands or with rubber gloves, depending upon the nature of the solvent used, it should never, from then on, be handled with bare hands. Clean gloves should be used. For dry metal a cheap type of canvas glove is preferred.

This precaution may seem to be an unwarranted nuisance and expense, but the experiences of most successful production plants will prove it otherwise. The men can easily become accustomed to wearing gloves, and the expense for gloves, after the first few weeks, will be very small. We always have the men turn in their old gloves before they get new ones, and it is a strict shop law that no one can handle any metal without gloves.

Tack-rag the Metal Surfaces Before Finishing

After the metal has been completely cleaned in every way possible, and is ready to receive its first coat, it may have traces of some fine dust or lint from the wiping rags, or minute pieces of

steelwool. To remove this dust and lint before the first coating, the metal parts should be "tack-ragged." This consists of wiping the parts thoroughly with a rag that has been specially treated. The treatment consists of dipping a good grade of rag into an air-drying varnish and allowing it to almost dry. The varnish imparts a tackiness to the rag and at the same time acts as a binder so that no lint will come off the rag. This rag will pick up all lint, dust or similar substances that may be on the metal, thus leaving the sheet metal in perfect condition for the first coat.

Binks' New Nozzle Catalog

Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., Engineers and Manufacturers of Water-Cooling Equipment and Industrial Spray Appliances, announce the publication of a new 8-page, 2-color, Spray Nozzle Bulletin known as No. 50.

The publication contains complete spray nozzle data and selection charts for all principal applications in the industrial field, including nozzles for air-conditioning, water cooling and water washing work, brine spray refrigeration, spray drying, moistening, air humidifying, and hundreds of other industrial applications.

Plambeck Becomes Assistant Technical Director of Roxalin

Albert O. Plambeck, formerly connected with Sherwin-Williams Co. and more recently with Ault & Wiborg Co. of Canada, has been appointed Assistant Technical Director of Roxalin Flexible Lacquer Co., Elizabeth, N. J.

Mr. Plambeck started with S-W Co. in their Chicago Lacquer Dept. in 1925, later being transferred to the Montreal, Canada plant in charge of lacquer operations. Following this, he served as Manager of the Canadian Lacquer Division and organized the Technical Service Dept. for the S-W Affiliated companies.

He left Sherwin-Williams Co. in 1934 to become Manager of the Ault & Wiborg Canadian Industrial & Technical Sales Dept., from which post he came to Roxalin Flexible Lacquer Co., where he will be first assistant to Mr. Leo Roon, Technical Director and President of the company.

Air-Conditioning Sales Ten Times Greater

Supporting the prediction made by a number of industrial leaders several months ago to the effect that 1935 would be a record year for the growing air-conditioning industry, Kelvinator Corporation has reported that its sales of air-conditioning equipment for the first four months of the present calendar year are more than ten times greater than those for the same period of 1934.

Continuous Glaze Spray

The O. Hommel Co., Pittsburgh, Pa., has placed on the market a new nozzle to be used in continuous spraying of pottery glaze and porcelain enamel. The glaze spraying nozzle can be adjusted to spray in any position desired and is free from clogging, the tip being constructed to give long life. As an added convenience the spray can be gradually changed from flat to round, or vice versa, by simply twisting a handily placed screw.

"Pad-Over" Finish Information

Information and prices relating to "Pad-Over"—a liquid finish for wood or metal, which is applied by a cloth pad—are revealed in new circulars just released by H. Behlen & Bro., 10 Christopher St., New York, N. Y. The "Pad-Over" finish is tough, durable and lustrous . . . . is not affected by hot soapy water, hot dishes, or liquors, nor does it show press marks.

FORMULA FOR SNAPPING UP PIGMENTED LACQUERS

If you wish to secure a Metallic looking finish with an ordinary colored Lacquer, add from two to eight ounces of Puritan Bright Silver Paste No. 200 to your color. This Puritan Paste must, however, be first reduced to a liquid consistency with a Good Grade of Thinner. Samples sent on request with technical information. Otto A. Both Corp., 50 Hartford St., Boston, Massachusetts.—Adv.

Furniture at the Spring Market, as Shown in Chicago

Styles, Designs, Colors, Finishes

by Edward F. Huffman

FURNITURE buyers — nearly 1,400 of them — attended the May Market of the American Furniture Mart at Chicago to see the "big news" in furniture for this summer, to learn what was doing elsewhere in their lines, and to place orders. Retail furniture business picked up remarkably well this spring and dealers were restocking on a heavier scale.

Here are a few highlights and intimate glimpses of what appeared particularly interesting in point of style, design, finish and color—to perhaps assist you to see or speculate upon the trends — so you can form your own estimate or guess upon the rising popularity of certain features, and the possible continuance of some other characteristics familiar to those who know furniture.

Bedroom Furniture

A number of fine suites of bedroom furniture in antique maple were exhibited; excellent examples of skillful craftsmanship; chiefly authentic reproductions of Early American pieces. The best suites were made of selected, high grade, solid maple, fully pegged, edge worn and antiqued. Popular priced suites included five, six and seven pieces.

In the lower priced field, a 4-piece suite in walnut-finished gum wood, with circular, plated mirrors on vanity and dresser, was outstanding for its modest elegance and atmosphere of comfortable livability; a very good number for any home of moderate income.

An inspiring suite of the Empire period, showing graceful lines of refinement, was made of solid and veneered mahogany, with drawer fronts of blistered maple —an unusual but strikingly attractive combination.

A well designed, substantially constructed suite in walnut showed

beautiful butt-walnut veneer on the fronts of the dresser, chest and vanity, and also on the headboards and footboards of the bed.

Dining Room Furniture

A few numbers in English oak appeared — 10-piece suites consisting of table, china, buffet, server and six chairs, one of the latter an arm chair. A Duncan Phyfe suite in crotch mahogany, a Sheraton suite, and an Empire suite commanded attention.

Breakfast and Dinnette Suites

Again, out of the storehouse of tradition and romance, comes antique maple as a leading finish for this popular type of furniture. In color, the maple finishes range from a rich honey maple to a mellow Burgundy brown. Authentic reproductions of the Early American saw-buck or trestle-type tables (with stretchers) were exhibited, the tops being pegged and edge worn.

In the solid oak sets, several interesting color combinations appeared, many of them being designed to match the leading makes of kitchen cabinets. Gray oak, tan oak, oyster white, and bone ivory still retain popularity. Some of the colors on these oak sets are special tints made up after considerable experimenting. Most of the suites have one or more top coats of a very flexible, durable, clear lacquer, or clear synthetic finish, which is as nearly as possible mar proof, liquor proof, waterproof, and heat proof from damage by hot dishes.

Library Furniture

In a well decorated space, the new bookcases, studio chests and desks were so interesting in point of refinement of design, quality of workmanship, and beauty of finish, that you would want to select one of each and have them sent to your home immediately. Especially inviting was a knee-hole

desk with a 23x45-in. flat top; a splendid design providing ample size for utility and comfort; faced with selected walnut veneers finished in clear lacquer, waxed and hand rubbed.

Living Room Furniture

Few living room suites showed any exposed woodwork; those few — davenports and easy chairs — had reeded, semi-circular arms

An occasional chair designed by Lester Wuenn; a graceful Neo-classic design; 5-button sag seat; roll back; reeded legs; wood parts finished in bone-white, mar-proof lacquer.

and bottom rails of mahogany. A few end tables, occasional tables and smoking stands were of Early American design, and finished in antique or honey maple.

Kitchen Furniture

Solid enamel colors of white, gray, green, and ivory, and combinations of the latter two, were the predominating color finishes on gum wood kitchen cabinets and units. Porcelain-top tables and bases were still used. Oak cabinets were finished along the lines of the breakfast and dinnette suites mentioned elsewhere in this article.

Cleaning the Dip Tank

IN OUR plant, where all prime coats on metal surfaces are dipped, there would occur every two days the nasty job of draining and cleaning the tank. The tank, being a flat one and setting on the floor, could only be drained entirely free by using a scoop bucket. This took considerable time and was a messy job.

Our finishing department, being on the third floor of a building that has an elevator, the idea was conceived of draining our tank to the floor below. Accordingly, a drain pipe was run from the bottom of the floor below, and arranged to direct the flow of material into an empty paint drum mounted on a dolly truck. The pipe had one valve just outside the paint tank, and one valve at the outlet of the pipe. When the tank was to be drained, the bottom valve was closed and the top valve opened. The receiving drum was place in position under the outlet pipe, the valve was then opened and the tank drained. Immediately after draining, a quantity of thinner was run through the pipe to clean it. This thinner was also caught in the same drum with the paint. . . . as there was always a certain amount of thinners required to be added to each batch. The drum was then run up on the elevator to the finishing room floor, ready to be dumped back into the dip tank when desired.—M. M. MILLER.

Summer Furniture

TYPICAL representative pieces of new summer furniture in streamlined designs and striking colors, appear in the accompanying illustration, which was made from a photographed display in a retail store at Washington, D. C. Notice how the semi-cylindrical arm rests on the glider serve as effective guards above the stationary end supports. These arm rests are finished in dark maroon or dark blue, and have reinforcing collars of chromium at the ends.

The small two-deck round table or stand, with bent pipe supports, is also done in contrasting colors. One combination consists of chromium bent pipe and two different dark colors for the round top and round shelf. One or more pencil stripe rings in white are struck about 2-in. inside the outer edges of both discs.

The chair at the right is supported by two flat steel springs, each of which is bent in such a manner that it forms a floor member, a front leg and an arm piece. Blue is the color. Each arm piece is capped with a shaped-wood armrest finished natural or in a contrasting color.

Checkerboard cushions, like those in the illustration, are in vogue, the favorite colors being white with light blue, green, pale red, orange, or violet.

Plain tables made of wood are enameled in pastel colors, a decorative feature being a small border not more than 1-in. wide in another pastel color.

Much of the summer furniture is going checkerboard—even oak tables having squares in pastel colors alternating with squares finished natural.—R. C. LUNCH.

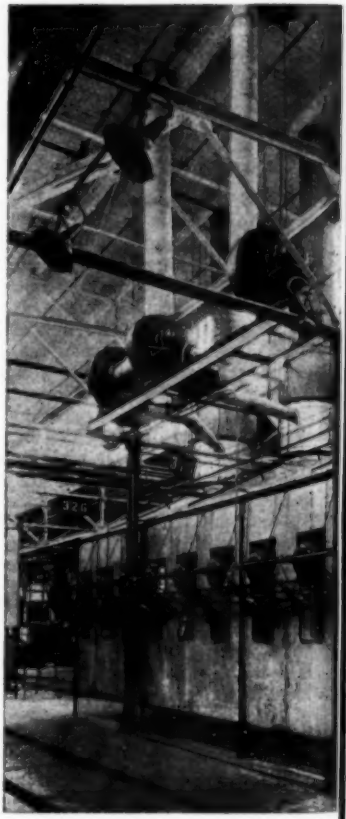
Chicago Eye Shield Opens Branch at Detroit

The Chicago Eye Shield Co. (Dust Masks, Helmets, Respirators) announces the opening of a Michigan Branch at 6530 Hamilton Ave., Detroit, Mich. (Phone Madison 4554). L. E. Averill is the District Manager. Complete stocks of Cesco head and eye protection equipment will be carried.

New Trends in Auto

by E. W. Windsor
The Sherwin-Williams Co.

FOR SEVERAL years previous to 1934, pyroxylin lacquers were recognized as the standard automobile finish throughout the entire automotive industry. In 1934 the Ford Motor Co. became the first of the motor car manufacturers to introduce a baked synthetic finish. However, these so-called synthetic finishes had already completely met the requirements and approval of the fleet owners and operators of commercial vehicles prior to 1934. Because they had been found to possess greater flexibility, better gloss retention, increased covering capacity, presented a better surface for repainting because of controlled chalking, and were quicker drying, they had supplemented oil or varnish enamels.



What Synthetic Finishes Are

Perhaps at this point I should make some explanation of the common designation of "synthetic finishes." Generally speaking, synthetic signifies it has been made or manufactured artificially in contrast with coming from Mother Earth. Prior to the chemical evolution of synthetic resins, as we know them today, all the gums that were used in the formulation of paint, varnishes, and lacquers, were what were known as fossil gums, representing the sap of various trees that are usually found in the Far East, and then imported to this country. They served the purpose very well, but we were not always sure of uniformity and certain other de-

motive Finishing*

Synthetic finishes—why they are coming into the automotive industry, what their merits are, and how to use them effectively and economically.

sirable characteristics. During the past few years the technicians of our laboratories learned how to make better gums than Mother Earth had ever given us. There are literally thousands of various synthetic resins, and certain gums have very desirable characteristics.

While synthetic resins promise to revolutionize paint practices, it does not necessarily follow that because a paint film contains a synthetic resin it is any better. The results are all dependent upon the scientific selection and blending of the synthetic compounds that produce the most desirable results.

Commercial Body Finishing

Synthetic enamels have become completely accepted in the commercial body finishing field. We have found that the shops directly concerned with the repainting of motor car vehicles could also use this type of finish in connection with many of their operations. Shops that happened to have an old varnish room or some other room that was dust-free, with good ventilation, found out they could turn out used cars at a considerable saving in both labor and material, because of synthetic's higher natural gloss which required less sanding and polishing and because of its better filling and greater covering which, in

*Excerpts from the author's paper which was prepared for and read before Automotive Service Conference at Purdue University, Lafayette, Ind.

turn, reduced the material cost per gallon for finishing.

It was found that these synthetic enamels were ideal for finishing wood and metal wheels. They had the flexibility required, and the high sharp gloss desired. In fact, the shops found that the better air-drying synthetics available gave them a much better gloss on wheels than the original factory jobs, due to the fact that in baking synthetics at a temperature of 200° to 250°F., some gloss was lost.

Synthetics Over Old Finish

Many of the auto painters were quick to learn that they could apply these synthetic enamels directly over the old finish without any necessity of undercoats, because synthetic enamels have greater adhesion than any other type of enamel. Many found that because of synthetic's exceptional covering capacity, they could cover solid in one coat, even in a brush application. Some did all spray work, others all brush work, and others sprayed the body and brushed in the fenders where they were required to do 2-tone work, and by such a plan eliminated the necessity of masking. Thus it has been necessary for every one concerned, directly or indirectly, with the refinishing of motor vehicles to become conversant with the use and handling of the new synthetic finishes.

How to Spray Synthetics

There are several factors of importance in connection with the application that I feel are particularly worth-while mentioning. In the first place, there is a difference in technique in the spray application of synthetics as compared with lacquer. With synthetics the gun should be held back further from the work—say 10 to 12-in. from the panels. Otherwise, unnecessary orange peel, sags, runs, and wrinkles may occur.

An especially designed synthetic nozzle should be used for very best results, this having larger airports than the regular lacquer nozzle, as more air is required to properly break up and atomize synthetic finishes. This means also that the air pressure should be increased. If you are accustomed to spraying lacquer with a cup gun at around 50 to 60-lbs., you will want to increase the air pressure in spraying synthetics to 70 or 80-lbs. Various manufacturers have specific instructions for reduction, depending upon the solid content of the material, and I urge you to follow their instructions. There are, however, many operators who are turning out beautiful work that looks like porcelain, without any evidence of orange peel, by reducing synthetic enamels as much as 35% to 40%, having found that light coats are much preferable to heavy coats—not only as far as adhesion and cohesion of coats are concerned, but evenness and uniformity of finish as well.

A Clean Room Necessary

Because synthetics do not surface dry almost immediately following their application, like lacquers do, greater care must be employed to insure a clean shop. If you do not have a dust-proof room, then at least partition it off from the rest of the shop, if by nothing more than tarpaulins, to keep the dust from blowing into the paint shop and the spray dust carrying out into the open shop where cars may be parked in storage. While there is less spray dust

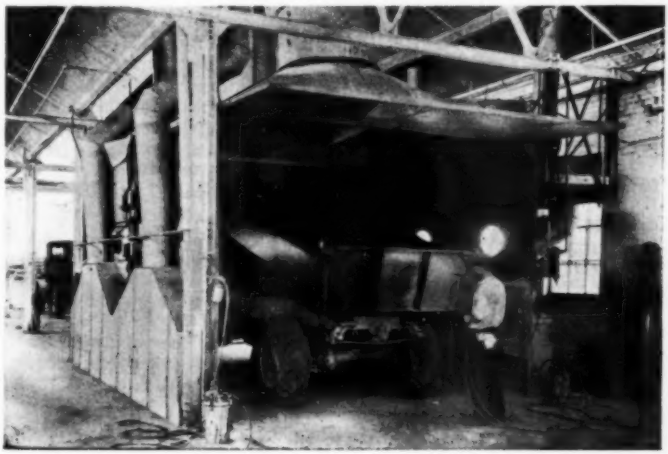
with synthetic enamels than lacquer, what spray dust there is is wetter, and if it should float over on other cars it probably will hold fast and cannot be easily or quickly rubbed off with a dry cloth like lacquer, but probably will require compounding to remove. Also, wash down the rafters and side walls regularly to prevent the accumulation of dust, which will fall into the work as a result of any little vibration of the building.

Learn to use a tack rag. These you can make yourself by dipping cheesecloth into a spar varnish and allowing it to dry until it just begins to get tacky. Or you may purchase these all prepared ready for use. The object of the tack rag is to remove the dust or dirt that may fall into the top of the film between color coats.

The Drying of Synthetics

The so-called synthetic finishes dry almost entirely through the process of oxidation, in comparison with lacquer which dries wholly by evaporation of the solvents. Thus, when lacquer dries there is no chemical change. With synthetics there is a chemical evolution—a combining with the oxygen in the air. This will also explain in a measure why synthetic finishes are more resistant to gasoline, oil, alkalis, and acid solutions than almost any other type of enamel.

The initial drying period of most synthetics, in setting up out of dust, takes place within the first two hours through evaporation of certain solvents, and it is for this reason that most manufacturers recommend recoating any time within 1½ or two hours. Where it is not possible to apply the subsequent coat of synthetic enamel within two hours, then 12 hours or an overnight drying period should be allowed; otherwise, raising is likely to occur because the solvents in the second coat



Photograph, courtesy of F. W. D. Auto Co., Clintonville, Wis.

would likely attack the oxidizing oils of the first coat.

Special Notes About Synthetics

The majority of shops apply synthetic enamels as a continuous operation. Supposing they start at the front of the vehicle; by the time they have sprayed all around the job they are ready to go around the job again the second time. Generally speaking, two coats of synthetic enamel are sufficient, but the first one should be a light semi-transparent coat to insure quicker setup and better adhesion to the surface, and the second coat should be a full wet coat. If the first coat is applied too heavily, there is a very good possibility that sags and curtains will develop in double coating; also increase the amount of orange peel, and on damp, humid days probably result in wrinkling.

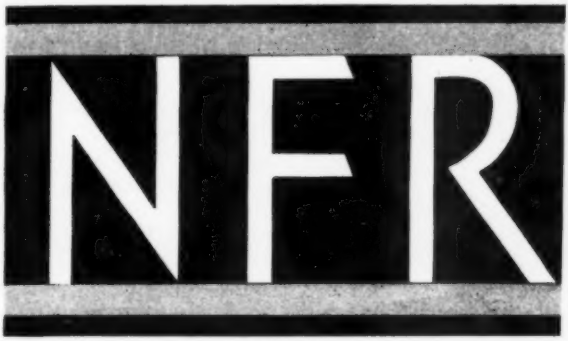
Synthetic finishes dry from the top of the film down, rather than from the bottom up; therefore, it may seem that the film is actually drier than it really is. Masking should not be attempted without at least a full overnight drying period, under normal drying conditions. This means that the temperature should be 70°F., and more where there is abnormal humidity in the atmosphere, or, where the coats are applied too heavily, or where there is not good circulation of air through the shop, or where drafts are blowing directly on the job. To make sure that the masking tape or paper does not stick too tight to the top of the film, it is often good practice to lightly pounce the surface with chalk before setting the masking tape or paper in place.

Generally speaking, no attempt should be made to compound a synthetic enamel without allowing at least 48 hours drying time or longer. In fact, several days are sometimes required for the film to become thoroughly hard. If it is rubbed before the film is thoroughly hard, a roughness of finish may be encountered, and it will be difficult to obtain a good rubbed effect. Under such conditions the enamel will have relatively poor gloss retention. Where a rubbed effect is required, the day following, the application of the last coat, the best procedure is to use a good liquid lacquer polish.

Occasionally it may be desirable for the synthetic enamels to dry with a semi-gloss rather than a high sharp gloss, and this may be done where desired by allowing the enamel to stand for several hours with the cover off, so that the material has an opportunity to oxidize somewhat. Of course, all synthetic enamels should be thoroughly stirred and carefully strained before use to prevent as far as possible the introduction of any dust or dirt that may dry in the final finish.

Editor's Note — The remainder of this article (Part II) will appear in next month's issue. Points covered will include: the thinning of synthetics, the use of synthetics for automobile repair finishing, sanding synthetic finishes, coating galvanized metal, using clears over colors, the probable future of synthetic finishes in the automotive industry, the development and characteristics of combination-lacquer-synthetic finishes, and the influence of car-color styles upon present and future custom finishing.

In point of luster, semi-gloss ranks higher than eggshell gloss.



WHAT IT IS

Egyptian N·F·R is a synthetic. It is not a lacquer-base material, nor is it a paint or enamel. But it combines the best features of each of these finishes. It is an especially superior finish for metal, and because of its great flexibility it is unexcelled for finishing wood that is to be exposed to weather conditions.

HOW IT WORKS

Egyptian N·F·R can be applied by brush, spray, dip, or roller coating. It can be either air-dried or baked. Comes in a gloss or satin finish.

Egyptian N·F·R has exceptional covering capacity—one or two coats usually being sufficient for all purposes. Two coats are recommended for articles to be subjected to outdoor exposure.

AN IDEAL FINISH

Egyptian N·F·R is an IDEAL FINISHING MATERIAL. It far excels ordinary oil paints in durability and has the added advantage of setting-up and drying faster.

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View in a typically modern finishing room equipped to admit only clean, fresh air . . .

. . . where control is maintained so as to keep the temperature, humidity and circulation of air within certain limits in all parts of the room.

» » Air-Conditioned Finishing Rooms—IV

CONTINUING the discussion on air-conditioned finishing rooms, which some day will be an accomplished fact in the majority of industrial establishments, we take up in this article the last three questions in the Editor's questionnaire,* and give a few of the most interesting answers that have come in from experienced, well-informed men in various industries that do high quality production finishing.

No. 6—Do you know of any finishing room or department that is properly air-conditioned—or even partially air-conditioned? Give any facts or ideas or suggestions you may have on this.

A) Most wood finishing plants, such as furniture and piano factories, are prepared to supply adequate heat at all times. This means that, even in warm weather, heat is available to reduce relative humidity when necessary.

At a given temperature, a cubic foot of air is capable of holding just so much moisture. With this same moisture content the temperature may be increased, and it is then capable of taking on more

*See March, April and May issues.

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moisture before reaching the saturation point. At 70°F. the ideal relative humidity is 40% of saturation point. By increasing or decreasing the temperature of the finishing room, this ideal relative humidity is more nearly held.

By examining weather charts you will find that the relative humidity is usually quite high in the morning. As the temperature goes up, the relative humidity goes down. Along towards evening, as the temperature decreases, the relative humidity again goes up. Many times, even in the summer months, the relative humidity is 90% or more. Thus it is seen that some means of heat control is desirable, this being easier than attempting to control humidity.

For metal finishing, humidity control is necessary only to the point of preventing blushing of lacquers. Most concerns do not find it necessary to do more than add a high-boiling solvent (retarder) to lacquer on rainy days.

B) Most large plants have covered the matter as far as purification of air is concerned.

C) I do not know of a finishing room that, to my mind, is properly air conditioned, although every finishing room that I know of has shown that some attempt was made to meet this problem by installing special heating units, fans, moisture sprays, etc. The condition of the air is controlled more or less crudely to meet the needs of the finishing room, and with indifferent results, but this proves to my mind that all concerned have felt the dire need of this important feature, thus the makeshift of today is the germ of tomorrow's perfection.

D) A few have begun to install equipment to regulate the temperature during the colder months here in the northern states—Michigan, New York and Illinois. This equipment has automatic controls, being fitted with mercury switches. Humidity control has not been attempted in these plants. In one of these plants I personally know that work moves faster and more regularly; that is, where formerly some pieces had to be placed in the cold parts of the room, warmer air is now circulated and pieces that would otherwise require 48 hours of drying time, can now be moved in 24 hours. These were filled and oil-glazed pieces.

E) Some factories in the east are experimenting with the air conditioning and so far they are getting good results. As soon as I get the information about them I will prepare an article on air conditioning in finishing rooms.

F) I have in mind a plant in Grand Rapids, Mich., that is partially equipped with air conditioning—heat control only—and that is not very good. There is no humidity control. They have an excellent force-drying kiln which is small, but it has heat and humidity control, and when I had charge of the finishing department there in 1929-30, it was giving excellent results, but the equipment was not installed in the proper way—to my way of thinking and from my observations.

G) There are installations where air-filtering alone is provided, as in japanning shops operating large conveyor ovens. Where the finish coat has a high gloss, it is a "Good luck, cross your fingers" proposition to attempt it without filtering the air (to clean it).

H) The Remington Noiseless Typewriter Co., Middletown,

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Conn., has for several years had an air-conditioned finishing room. It is the finest finishing room I have ever had the pleasure of visiting. The foreman remarked to me, at the time of my visit, "We just can't help turning out good work here," and they do.

No. 7—What are your chief objections to the finishing room that it not air conditioned — where there is no careful control of the temperature, humidity, circulation and cleanliness of the air?

A) Many risks, bad health, impaired morale, etc.

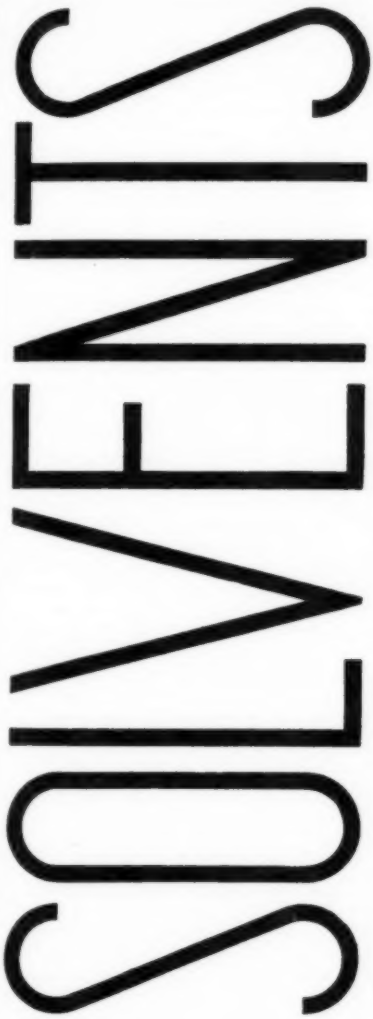
B) My chief objection is that there can be no consistent planning of the work going through this department, as we have no control of the weather. Frequently the working conditions are more or less unhealthful due to lack of fresh, clean air, improper circulation of air; low temperature causing discomfort; poisonous fumes from materials and reducing chemicals adding to the unhealthful conditions; dust entering in from other departments to play havoc with finishing coats; imperfect drying of base and finishing coats interfering with uniformity of finishes; all the above contributing to haphazard results and upset schedules, and the censuring of foreman and employes because of their inability to do the impossible.

C) In departments where no control of humidity and temperature and circulation of air is exercised, objections such as the following could be raised: positive, predetermined drying time of materials cannot be established; no exact knowledge of when the previous coating is correctly and sufficiently dried to permit application of the succeeding coats of finish. Lack of sufficient humidity often causes a "case-hardening" condition in fillers and on heavy, oil-glazed surfaces. They feel dry to the touch but an application of a lacquer coat will quickly show that the surfaces are merely surface dry or case-hardened. If the condition is such, the filler will raise slightly in the pores and lose much of its origin1 color. A bluish or grayish cast appears, killing the effects produced by the fillers and glazings. On oil-glazings it will often buckle up where the glazing is a bit heavy. I have seen it turn a dirty green when not dry, caused by the night man closing steam valves that should have had automatic controls. Too frequently the human element fails.

It has often come to my mind that the circulation of air in the drying rooms is seldom mentioned in the various articles I have read. It is very necessary to have the air constantly moving, as it will soon become saturated if not moved, and drying will be at its minimum. The value of the cleanliness is very well known by those concerned.

D) The finishing materials do not dry properly underneath. Lacquers, varnishes and enamels, to all appearances and to the feel and usual test, may pass for dry, but underneath they have not dried as they should have. Shellac should have from five to six hours to air dry, and then it is not as it should be without heat. Where there is no control of temperature, humidity circulation and cleanliness of the air, almost anything is liable to happen to the finish . . . such as dust nibs, case-hardening, checking, crazing, and cracking.

E) Poor work; operators discouraged, worn-looking, tired,



Butanol and butyl acetate are truly the ideal lacquer solvents—from the viewpoint of both the lacquer manufacturer and the lacquer user. They have just the right balance of characteristics.

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careless in their appearance and in their finishing.

F) The general effect on the help. Poor air conditions in a finishing room is a detriment to the workmen's vigor. Foul air retards evaporation of the solvents in the finish materials, thereby holding back the flowing and setting of the film of the finishing material.

G) Opening of windows by the men to get fresh air; dirty finished work.

H) Here is the type of finishing department I have had personal experience with, and the grief caused by atmospheric conditions is tremendous. Humidity always causes trouble, usually not asserting itself until quite a bit of work has been completed, with the resultant loss of time and materials in refinishing. Also dust particles, etc., in the air, causing troubles that do not show up until too late to avoid many rejections of work. Heat and cold extremes for the type of finish being used also enters into the trouble column, all of which is not only costly but delays production to a point beyond control in many cases.

I) Dust; that means dirty work. In some cases reduced output, due to personal discomfort of workmen, or to slow drying or improper drying of varnish, or blushing of lacquer.

J) My chief objections: It is impossible to get the same flow from your spray gun or brush. Also it is impossible to get the same body, or same thickness of film on your finish, regardless of what you may be finishing, whether it pertains to wood, metal, cardboard, paper, wallboard, etc. I have seen finishing departments have to shut down for three or four days on account of the humidity being so bad that no material would work properly, especially where factories are located near lakes, rivers, or low land. Also, dust constantly rising from the floor . . . such things as smoke blowing through finishing rooms, causes some finishes to be darker than others. Open windows cause more grief than anything; takes any finisher longer to accomplish results; causes a lot of patch work . . . and other things. This could all be eliminated if the finishing room were properly air-conditioned.

No. 8—In your answers to the above questions, what kind or type of finishing room or department do you have in mind? Large, medium or small? What kind of finishing, or what kind of products finished?

A) For all fine finishing of wood, particularly furniture, pianos, stringed musical instruments, radio cabinets, etc. For some finishing with lacquer on metal, such as refrigerators, automobiles, clocks, burial caskets, vanity cases and jewelry. Size of the plant is not so important as the quality of work being done. I mention large volume in metal finishing, as I believe it is only the concern doing a large volume of such work that can be interested. The smaller concerns have less chance of getting dirty work and they can usually quit spraying for a while in cases of extreme humidity. With modern lacquers, there are very few times when satisfactory work can not be done.

B) The finishing room where fabricated hardwood articles are finished, such as furniture, high grade bank and store fixtures, pianos, and other fine cabinet work

of wood construction. In this type of finishing room, air-conditioning equipment would be a great step forward.

C) Speaking in general terms, all kinds of finishing departments and products.

D) In my opinion, it does not make any difference whether the finishing room is large or small; the same difficulty arises in the small one as well as in the large. The finishing room should be so equipped as to control all inside air conditions, and as for what products are being finished, it doesn't make any difference.

Editor's Note: While this is the last of the four articles dealing with answers to a questionnaire the Editor mailed to several experienced, well-informed men in responsible positions in various industries doing high quality, production finishing, a number of other articles dealing with this same timely and all-important subject will be published in future issues of INDUSTRIAL FINISHING *magazine.*

Spray Equipment Booklet

An 8-page circular containing illustrations, descriptive data and prices on the Master line of spray guns, containers, booths, hose, filters and compressors, has been published by the Burning Brand Co., 1400 W. Fulton St., Chicago, Ill.

New Titanium Pigments

The Krebs Pigment and Color Corporation has announced that three new pigments will be manufactured at their new plant in Edge Moor, Delaware, when the plant goes into operation about June 10, 1935. Edge Moor is located on the Delaware River about three miles north of Wilmington. The main office of the company was recently transferred from Newark, N. J., to 1007 Market St., Wilmington, Del.

These new pigments will be called TI-CAL LO, TI-CAL HO and TI-BAR, and are extended titanium pigments, having calcium sulfate and barium sulfate bases as indicated by their respective names.

The new plant, modern in every detail, comprises 20 buildings. The design and equipment have been selected to assure exact control of the sensitive processes involved in the manufacture of uniform pigments of the highest quality.

"Rubber Gloss" Floor Wax Is Waterproof

The Franklin Research Co., Philadelphia, Pa., is offering what they claim to be the first really water proofwater emulsion wax ever made. The improvement is now available in "Rubber-Gloss."

To the maintenance man, damp mopping is an important part of every floor cleaning program. It is generally necessary to re-wax a damp mopped floor due to the injury to the wax film that the water causes.

Ordinarily water destroys the gloss and often causes white streaks and spots. It is claimed by the manufacturers that water has absolutely no effect upon their new material. It may be damp mopped an unlimited number of times without apparent effect.

T. R. Nall with Jones-Dabney

T. R. Nall, formerly a finisher and foreman finisher in the Louisville, Ky.—New Albany, Ind., territory, is now connected with the Jones-Dabney Company's Sales-Research Finishing Laboratory at Louisville, Ky. His work consists chiefly of making up and testing panels of sample finishes, and finishing products which are sent in by present and prospective customers of the Jones-Dabney Co.

"Dutu" Primer-Paint

An all-purpose interior paint that primes and paints over plaster, wallboard, unfinished wood, and masonry, is announced by The Tremco Mfg. Co., 393 E. 131st St., Cleveland, Ohio. It has excellent hiding power, can be brushed or sprayed, shows no brush marks, resists moisture, and can be washed. Colors: white, ivory, gray, cream and green.

Suggestions for finishing new furniture and fixtures made of

Philippine Mahogany and Oak

by Orrie D. Maal
Western Industrial Representative
S. C. Johnson & Son, Inc.

DURING the last five years, on the Pacific Coast, Philippine mahogany has come into considerable use as a furniture wood, especially for dining room, bedroom and novelty furniture; also for some living room furniture — and for fixtures for stores and bars.

It has been a big problem to get a good looking finish on this wood because the large pores (particularly in the cheaper grades) absorb finishing liquids like a sponge. Water stains especially give trouble, more so on veneers than on solid wood and, due to the raising of the grain, you are likely to get a poor job of filling, making the final finished surface appear very muddy looking.

Some manufacturers discovered that by filling first, then following with a coat of lacquer sealer, sanding and spraying with a lacquer shading stain, a fairly presentable finish could be obtained. However, the wood was always covered up completely on the darker spots and, when scratched, it was impossible to make a decent patch job, because the scratch usually went down to the filler. The only way to restore the surface was to remove the entire finish and build up a new job again. Some present cheap furniture is still handled that way.

As Philippine mahogany came more and more into use, oil stains entered the picture. The best of these (according to my experience) are the so-called pigment or wiping stains. These are being used extensively today for the cheaper finishes; however, when the permanent and non-grain-raising stains were developed, this wood really came into its own — and some very beautiful finishes are now being produced.

Suggested Finishes

Some of these are the waxed finishes without filler—one coat of permanent stain; one coat of lacquer sealer; sanded; one coat of flat lacquer; steelwooled and waxed, using a paste wax to fill the pores.

Some of the better grades of finish are obtained by the following method; a very light coat of permanent stain; then shaded and highlighted by skillfully using the stain, full strength; lacquer sealer; sanded; flat lacquer; steelwooled and waxed.

If a dusty finish is desired, rottenstone can be mixed with the

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wax, leaving it to the manufacturer whether to use liquid or paste wax. The paste wax naturally will help fill the pores of the wood.

In case a filled surface is desired, I would advise filling after the sealer has been sanded; then apply as many coats of lacquer, shellac or varnish as may be desired on the filled surface.

A beautiful finish can be obtained on the softer woods by filling first and then staining with permanent stain. This stain will penetrate sufficiently to make it safe from scratching; then proceed with as many coats of lacquer or varnish as desired.

I have had some ten years' experience working on Philippine mahogany with the manufacturers on the Pacific coast, and I know that today some of the best stores in the country are handling this California and Spanish furniture.

If some of the panels are worked in with pastel colors, they should be filled before the paints are applied, unless a porous effect is desired.

Modern Finish for Oak

I mentioned oak in the first part of this article, because a lot of oak is being used also, and these oak suites finish beautifully with the permanent stains for waxed finishes — staining first, highlighting and shading with full-strength stains; some wonderful old browns can be worked out this way. It surely is a far cry from the old way of finishing the period styles in oak some 15 or 20 years ago, when we had to do it all by hand and all the highlights had to be put in by hand sanding.

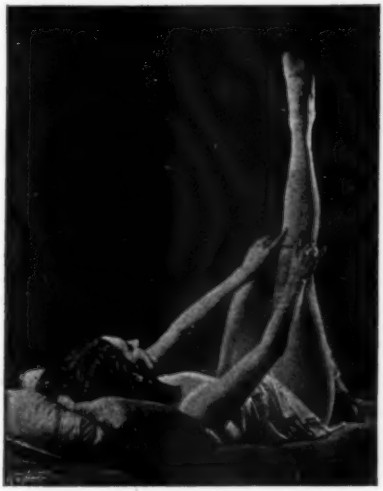
Naturally these same finishes apply to all other woods, but my thoughts have turned to Philippine mahogany because it has been a hard problem to finish it in a satisfactory manner, and I know that plenty of manufacturers are still having their troubles.

Begin Finishing After Sanding

One thing I learned by experience is that the quicker a finishing material of some kind is applied to Philippine mahogany, the better, after sanding in the mill or cabinet department, as the softer kinds will have to be sanded again in a few hours if left unfinished. Manufacturers that know this usually apply stain or filler within a short time after sanding.

About 14 years ago I was working for a Chicago finish manufacturer and was called upon by three Chicago furniture manufacturers to work out a suitable finish on some Philippine mahogany they had bought, as they had tried about everything, and were still unsuccessful.

We arrived at a satisfactory finish by glue sizing first, sanding, and then filling twice; however, this made the finish too expensive, and besides the wood contained numerous worm holes. This was the first real shipment of Philippine mahogany for furniture in this country, I believe, and it surely proved unsatisfactory. But those troubles are over now if the wood is handled as I have recommended in this article, as the wormy condition has been taken care of, and if the routine I have laid out is followed, a very good finish can be obtained.



Finishing ...LEGS OR PRODUCTS!

When Madame pulls a shimmering silk stocking over a shapely leg . . . she enhances its beauty. The covering is thin indeed, but it adds brilliance, sheen, charm . . . and eye-appeal.

It's the same with finishing materials . . . cold metals and raw woods are not pleasing to the eye . . . but the proper finishes endow them with the spark that ignites admiration . . . acceptance . . . sales.

The finishing touches make the masterpieces . . . legs or products!

Our staff of creative artists is at your disposal in solving product-finishing problems. No obligation whatever. Will you write?

"No Tampering with Quality"

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Questions « Answers

Cleaning Castings

In reply to the "T. Mfg. Co.'s" question about cleaning lawn mower castings (May issue, page 6), I find that different methods are used for cleaning castings to be finished in the various enamels. I have found the most efficient process of cleaning is the sand-blast, which takes off everything —grease, sand, etc., and leaves a surface that gives a good bond for enamels.

There are also a number of excellent liquid cleaners on the market. I have in mind one firm that uses a liquid solution to clean small cast parts for a floor sanding and polishing machine. They use 1 to 2-ozs. of a commercial chemical cleaner to each gallon of hot water.—J. E. GREENE.

EDITOR'S NOTE: A manufacturer of commercial cleaners for metal cleaning replied to the above question somewhat as follows:

There are two methods available, in both of which an alkaline cleaning material is used as a cleaning medium. These two methods include a tank method and a spray washer method.

We are manufacturers of a line of cleaning materials and would highly recommend one of these for this particular class of work. In a tank method we recommend a concentration of 4-oz. per gallon of this material, dissolved in water and brought to the boiling point. The castings to be cleaned are then immersed in this cleaning solution for a period sufficiently long to remove the oil—not longer than five minutes at the most, probably less. The articles are then removed from the cleaning solution and rinsed in clear water which is preferably hot. This facilitates drying and gives a good clean surface which may be painted without any fear of spotting out the paint or lifting due to oil which may be left on the casting.

The other method — the spray washer method—entails the use of somewhat more extensive equipment. There are a number of washer manufacturers who can supply this equipment. Generally it consists of a chamber in which are spray nozzles through which the cleaning material is forced by a pressure pump. The work is passed through this spray chamber on a continuous conveyor belt or chain, and from the cleaning chamber it passes through a rinse chamber equipped in the same manner. This type of equipment is satisfactory for straight line production work. In the washer equipment, a concentration of only about ½ to 1-oz. per gallon is necessary inasmuch as the force of the spray assists materially in the cleaning action.

Heat-Resisting Finish

Referring to an inquiry under the above title, on page 6 of May issue, I am pleased to give you physical characteristics of "Compo Impervious Paint" . . . . which I consider an excellent finish for your electric furnaces.

Colors—All colors but white, including transparent.

Drying time—(Air) 7 hours.
Finish—Permanent high gloss.
Covering—600-sq.ft. per gallon.
Hiding—Solid in one coat.

Adhesion—After high temperature, excellent. Will resist temperature to 650°F. without loss of gloss, adhesion, or harm to film.

Resistant to—Oil, steam, high temperature, acids, alkalies, and fire.

Rust inhibiting—Gives a hard film, in addition to being thoroughly elastic.

The surfaces to be coated should be free of grease, oil or other foreign matter. Thin only with mineral thinners.—J. E. GREENE.

BEUGLER *DeLuxe* STRIPING KIT

$8.50 POST PAID

Complete kit as shown including two wheels and eight guides. Ten-day, money-back guarantee.

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COMPLETENESS—A complete striping kit in a beautiful case.
ACCURACY—Precision built . . . stripes perfectly in any position.
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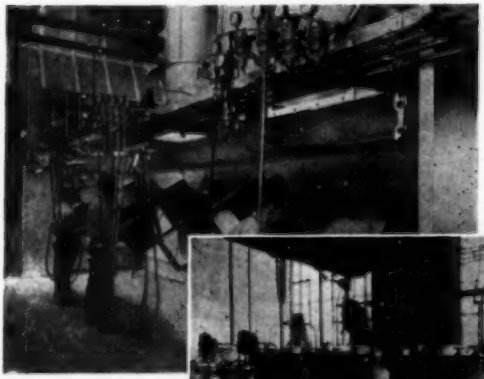
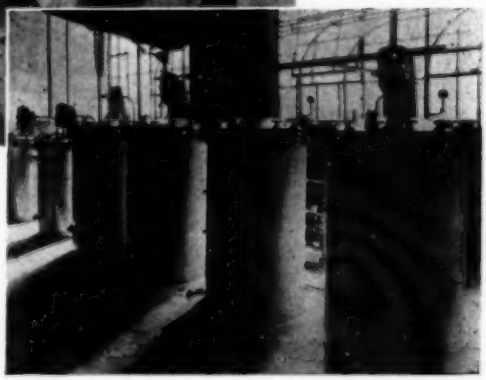
New Spray Painting Installation

ADAPTING the practices of large automobile plants in order to speed the production of Hotpoint ranges and other appliances, the Edison General Electric Appliance Co., Chicago, Ill., recently completed the installation of a complete paint circulating system, together with an enormous double-spray painting booth. The spray booth is of the very latest type with a water wash chamber to purify the exhaust fumes and reclaim pigment. It is completely conveyorized to facilitate and hasten finishing operations.

Engineers of the Binks Mfg. Co., applying their knowledge and experience gained in installing circulating systems for large automobile plants, adapted the principles learned in this field to complete an installation exactly suited to the Edison Company's peculiar production requirements.



Left—Spray operators working in double conveyor spray booths, to which material is supplied by pipe lines. Water washing in the exhaust chamber reclaims paint pigment from the exhaust fumes.



Right—Four 100-gallon and two 60-gallon paint storage and mixing tanks, the paint circulating pumps, and other mechanisms, including pipe lines which convey paint to the spray-gun operators.

Plumbing Fixture Colors

CURVES, the artist's lines of of beauty, are being given full play in the newest plumbing equipment . . . in addition to having more color added. The Standard Sanitary Mfg. Co. is showing nine new colors for bathtubs, lavatories and closets, as follows: Ivoire de Medici (lemon yellow), Rose du Barry (a pastel orchid),

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More than 550 pages (5½x8½)

Royal Copenhagen Blue (dark blue), Ming Green (light pea green), Clair de Lune Blue (light blue), Persian Brown (buff), Corallin (light pastel salmon pink), Orchid of Vincennes (lavender), and T'ang Red (a red purple or amethyst).

The fancy named colors are variations of pastel shades—very light in intensity and shimmery with the faintest traces of Mother-of-Pearl.

Attractive color combinations include orchid fixtures against a background of light green, lavender against black tile, bright green against lavender or dark blue, light blue against buff, buff (with light burnt orange tinge) against black, lemon yellow ivory against a darker buff, red against yellow accented by widely spaced slender green stripes, and light gray against parchment yellow. —R. C. LUNCH.

Daylight's Effect on Finishing

NOW AND THEN someone raises the question of light in the finishing department, or rather that phase of the question covering the effect of light upon the drying of finish. Some finishers contend that light is just as essential as air to proper drying, and that materials will dry faster in a well lighted room during daylight than at night.

Others take a different view of this matter and insist that the drying of finishing materials is solely a matter of temperature and air circulation, and that light has nothing to do with it. There is room for argument on this question perhaps, but there are other points about light in the finishing department which are well enough established to need no argument.

Good daylight is essential in staining if we expect to maintain uniformity in stain shades, or stain with any degree of exactness the shade that is wanted. The ideal light for this kind of work is the same as the ideal light for the draftsman or artist—light coming from the north so that it will remain practically uniform and not vary materially with the passing of the sun, as will happen when the light is received from any other side of a room.

Sunlight shining directly on either unfinished or finished woodwork has a tendency to bleach out and deaden colors. Therefore, the direct rays of the sun should be avoided if we are to get and keep the right kind of live color tone in finished work. To keep finished work or woodwork in the white clean and bright, it should be stored in a dark place; at least it should be protected from sunlight.

From all this we conclude that light is an excellent thing in the finishing department, as it enables one to judge stain shades better, and it also makes for greater skill and more satisfactory results in the spreading of finishing materials. Daylight is much better for this kind of work than artificial light. Wonderful progress is being made in electric lighting, and some day we will have something practically as good as daylight, but it will never be better.

The ideal finishing department is one that is well lighted; that is well provided for receiving daylight, preferably from the north side. When it comes to drying,

either in the finishing department or in any specially provided drying room, some actual value of light will have to be demonstrated before it will receive much consideration from practical finishers. The main factors are to provide for uniform temperature, air circulation, and a conditioning of the air so that it will carry the same percentage of moisture all of the time.—C. F. SCRIBNER.

Letters from I. F. Readers

(Continued from page 6)

FINISHING in which it appears. If it has not already been published, will you kindly put us down to receive a copy when it becomes available?—W. C. F. Co. (Builders of Motor Truck & Passenger Car Bodies).

EDITOR'S NOTE—An illustrated feature article entitled "Applying Flock Finish," by M. G. Kopf, Consulting Engineer, appears in May, 1935, issue, pages 19, 20, 21, 22 and 24.

Where to Buy Flock

Will you please furnish us with the names of several manufacturers of cotton flock?—V. O. Co. (Lacquer Specialists).

EDITOR'S NOTE—One flock manufacturer's advertisement appears at the end of the article mentioned above. Others are mentioned in a letter of reply to this inquiry.

Fruitwood Finish

Would you please send me information as to the materials and methods used in attaining the new finishes, such as fruitwood, bone white and antique ivory?—J. F. S. (Furniture Spraying).

Process Hardens Soft Wood

We note, in your February issue of INDUSTRIAL FINISHING, on page 46, (also, in April issue, on page 6) an inquiry for a method of hardening soft wood. We have developed a process for not only hardening soft wood but for hardening wood pulp or paper. We would be glad to give your correspondent full information. —The Grady Mfg. Co. (Metal Polishes).

Silk Screen Methods

We are interested in an article about silk screen methods of reproduction, which appeared in INDUSTRIAL FINISHING for December, 1934, pages 36 and 38. Would it be possible for you to supply us with a copy of this article, or a copy of the December, 1934, issue of the magazine? —J. C. Glass Co. (Glass Ware).

Synthetic Pearl Essence

In the May issue of INDUSTRIAL FINISHING, on page 6, there is an inquiry with reference to pearl essence. We are sending our leaflet describing our synthetic pearl essence, H-scale, and would appreciate it if you would forward it to the proper party and advise us also of the name of the interested party so that we may contact them direct.—Celluloid Corporation.

Heat-Proof Aluminum Paint Wanted

We are in the market for an aluminum lacquer for finishing a new product that must stand repeated heating to a red heat. We have investigated the local market but do not seem to find anything suitable. Someone in our organization remembers having seen something of that nature written up in your magazine, which was called "Aluminall Flameproof," but we cannot locate the manufacturer. We wonder if you would be kind enough to fill out the enclosed card, giving us the name of this manufacturer so that we can write him about the product. If it fills the bill and stands our tests, we would probably buy quite a substantial amount, as we expect this new product to go over big this fall.

We would like to also thank you for the sample copies of your very interesting magazine that we receive from time to time, and for any information you may send us.—S. W. T. Co. (Mfr. of Hardware Specialties).

Automatic Timer Catalog

The Walser Automatic Timer Co., Chrysler Bldg., New York, N. Y., announces release of a new automatic timer catalog, with illustrations and complete descriptive information.

The Centrifugal Enameler in Daily Use

by Charles F. Moss
Enameling Superintendent

Gentlemen:

As an interested reader of your magazine, INDUSTRIAL FINISHING, *for some time, and having obtained many good pointers on enameling from its pages, also being among the first to install one of the Filwhirl Enamelers which has been mentioned frequently, I thought I would pass along a little information, if agreeable, to the other fellows who have so kindly offered suggestions that have helped me in the past.*

The Centrifugal Enameling Machine deserves to be, and now is a factor in the enameling industry. It is being used by many concerns that I know familiarly, who are doing large quantities of bulk coating work in one operation.

It is my opinion that this method will soon become as widely used as any of the recognized ways of finishing. I have given much time and observation to its versatility and feel qualified, by experience with it, to make this statement. My company was among the first to use the Filwhirl machine. I have followed its development closely.

Should you feel that this article has merit enough for publication, I would be glad to send you practical information or other articles on different phases of this method of finishing, in the event such information might be worth while.
—CHARLES F. MOSS *(20 years Supt. American Enamel Co.)*

IN THE same way that spraying has the advantage in its good points over dipping and tumbling, the centrifugal process of enameling also has its advantages over the other three. The process, because of an excellent piece of equipment, is extremely simple and will positively improve production wherever it is applicable. Work in process is dumped into the centrifugal basket, flooded with enamel, spun for a few seconds, dumped out into trays, and baked. Breaking apart when partly baked is only necessary in the case of nesting and may, in most instances, be done when removing it from the oven while hot.

I have witnessed the coating of thousands of buttons in two minutes, also many pounds of hairpins and bobby pins, snaps, rivets, small buckles, springs, screws and similar pieces in the same length of time. This is unusual to say the least and only by this process has it been made a reality.

The method is readily applicable to coating parts with a liquid rust-resistant enamel or oil after a chemical rust-proofing treatment, which usually renders the surface of metal receptive to a necessary surface finish to complete the rust-proofing of castings, machine parts, etc. A great many

VALUE *above* COST!

NOT by magic, but by using accepted standards as your "yard stick," you will find it possible to produce a *better* finish at no additional cost, with our "Unquestionable Quality"—Custom-Built finishes.

Lacquers, Sealers, Stains, Fillers, etc. Liberal working samples to convince you — write for them.

V. J. DOLAN & COMPANY, Inc.

Manufacturers of "Unquestionable Quality"
Wood Finishing Supplies

1830-32 North Laramie Avenue Chicago, Illinois

Send for the *New* SPRACO Catalog

This new catalog describes in complete detail the latest improved equipment for production finishing operations. Regardless of the equipment which you are now using we believe that it will be to your advantage to investigate the latest SPRACO products.

SPRAY ENGINEERING COMPANY

INDUSTRIAL FINISHING ENGINEERS

116 Central St. Somerville, Mass.

articles of common use, namely tools, valve wheels, toy parts, and other pieces too numerous to mention, are quickly and beautifully finished by this method.

For Finishing Automotive Parts

In the automobile industry it should be a great help, as it might be used successfully and to great advantage in finishing exposed bolts, nuts, joints, rods, clamps, cotter pins, pulleys, arms, levers, and any medium-sized parts on the machine. One outstanding feature of this process is that the threads on bolts or tapped-in nuts are evenly coated, yet they are left perfectly clean with not the slightest thick residue of paint to interfere with screwing the nuts on the bolts. The coating might easily prevent rusting and locking together in months to come.

Bulk production is by no means the limit of this process. Many larger parts can be finished on holding racks made to fit in the pan of the machine. Automobile fans, engine parts, breather tubes, door handles, metal knobs, instrument parts, slides and caps come under this head. All objects are thoroughly coated inside and out. The finish is forced into every hole, joint or seam by centrifugal force. It is not a mere encasing of parts with an envelope of loose enamel. An excellent, forced-surface contact, similar to a scrubbing, is a part of the process, therefore adherence that is equal to any is assured. The coating is applied equally well to every hole and crevice, hidden or otherwise, whereas no other method of coating would give this complete coverage.

Clear Lacquer Finish on Brass

Carefully finished brass pieces, such as pencil caps, ferrules, connections, cases, drapery fixtures, hardware, trimmings, and similar articles can be coated in bulk with clear lacquer by this machine, producing a clear, thin, even finish, without any heavy edges or spots showing the material, which might interfere as in the case of hinged pieces. In many such instances, the pieces are entirely dry when taken from the machine and can be dumped into containers as finished.

The Right Material for Use

All coating materials of ordinary make may, or perhaps may not, produce satisfactory results at once in this centrifugal machine. It has been necessary to change the viscosity where greater adhesiveness is required for the desired thickness to stand up under the pull of the throwing force. Several enamel manufacturers are, to my knowledge, regularly producing finishes that cover well on several kinds of work without any adjusting. The principal control is in the time of spin, and in the character, thickness and density of the enamel or lacquer.

The machine should have instantaneous pick-up, stop, and a reverse which obviously gives the operator a positive control of all variables. The abruptness of the control and the reversing is necessary to change the position of the work in the basket—a very essential requirement on many kinds of work.

Knowing the filwhirl machine and having obtained satisfactory results on a wide variety of different work that seemed impossible by any other method, I am glad to pass the information along and to answer any questions or make suggestions to anyone interested.

Dipping?

Yes! In many industries unexpected economy and satisfactory finish have been secured by using Dipping Cel-u-Lak. Difficult sizes and contours have been successfully handled.

Toys, auto moldings, agricultural implements, tools, novelties, handles, brushes, are only a few of the objects where Dipping Cel-u-Lak has been effective.

Send us a dimension sketch of the article; tell us the material and the color desired and we shall give our suggestions gladly.

THE VARNISH PRODUCTS CO.

CLEVELAND, OHIO

THE BARRETT
Filwhirl Enameler

For Coating Small Parts
12 Inches or Less

Machined parts, valve handles, hair pins, eyelets, helical springs, spools and similar items, including certain hollow objects that have never been considered practical for enameling due to troublesome gravity draining, now being enameled in high production very economically. The finish is excellent with no fatty edges. There is practically no waste of coating material. Investigate in a practical manner by sending samples of your work to be enameled and returned to you with our estimate and recommendations.

The Leon J. Barrett Co.

GRAFTON STREET WORCESTER, MASS., U. S. A.

What's New « «

For Treating Burns

Small burns on the hands and arms are common occurrences around a plant or factory where heat is used in production. Serious infection may occur with resultant hospitalization costs, decreased efficiency, and other disturbances. Bad burns must, of course, be cared for immediately.

In order to facilitate prompt and effective treatment of burns, The DeVilbiss Co., Toledo, Ohio, has developed a special atomizer for applying tannic acid, a burn remedy recognized by industrial medical authorities. This atomizer offers particular speed and convenience in first-aid work by the incorporation of three special features; 1) A wide-mouthed bottle to facilitate filling, stirring, and cleaning. 2) Acid and water levels clearly marked on the bottle to make correct mixing easy. 3) A wide volume of soft spray, giving quick and effective application over a wide area.

Convenient and effective for treating small burns, in first-aid work.

Measures Viscosity

The O. Hommel Company, Pittsburgh, Pa., has designed an apparatus which, with little difficulty, enables the operator to determine accurately both the specific gravity and the viscosity of porcelain enamel slips. The apparatus consists of a brass pipette which at the narrow end is fitted with a standard thread, making possible the use of nozzles of various sizes, depending on the viscosity of the enamel to be measured. The same pipette with a different nozzle is therefore suitable for ground coats, as well as cover coats. With the aid of this pipette it is possible to reproduce and control the enamel used in dipping either ground coat or cover coat.

Renewable Air Filter

A replaceable air filter, designed to reduce power costs in the operation of air-conditioning equipment by establishing uniform resistance for the air flow, has just been placed on the market by the American Radiator Co., 40 W. 40th St., New York, N. Y.

Made of corrugated fiber board, with cellular passages set at an angle so that air scrubs along the sides of the passages and dust is absorbed by a special compound with which the board is coated, it was designed to provide an efficient and inexpensive filter. It can be used in air-conditioning installations, ventilating systems, warm air furnaces, window ventilators, air compressors and internal combustion engines.

Three models are offered, one for high efficiency industrial applications, another for ventilating or air-conditioning systems where outside air has to be cleaned, and a third for use where a major part of the air filtered is recirculated air. In operation, each dust particle is saturated with the special compound used as a

coating and becomes a medium for absorbing more dust, thus assuring long life to the filter.

Coating Machine for Venetian Blind Slats

Editor's Note — Advance news of a development has just been received in a communication signed by E. G. Daley, Chief Engineer of the Chas. E. Francis Co., Rushville, Ind., and W. J. Kratz, Industrial Engineer for The Venetian Blind Mfrs.' Service Bureau, which follows:

For the past several weeks we have been engaged in designing and perfecting a coating machine, to be used to apply finish to the wood slats of Venetian blinds. This machine, with accessories, should be ready for the market about July 1. It will coat four sides on each pass through, and will take stock ranging from ⅛ to 1-in. in thickness, and from 1⅜ to 2⅝-in. in width, at the rate of 100 lineal feet per minute. It will be equipped with explosion-proof motors and fans, and vapor-proof switches.

The drive motor is belted to a heavy pulley that acts as a flywheel, insuring smooth running. Power is transmitted from this wheel to the various parts by gears and chains. Feed rolls are solid rubber; the guide throat is of solid bronze, polished. Coating rolls are built of white oak, faced with steel plates. The composition used for tires on the coating rolls is applied only to the white oak portion, this insuring good adhesion.

Finishing materials are fed to the composition rolls by gravity. The overflow runs from a splash-proof pan into a container, so that evaporation loss is minimized, and the floor is kept clean.

Slats are fed into this machine from a steel table; before they enter the feed rolls they pass over an explosion-proof vacuum cleaner, so that no dirt particles remain to be pressed

Coats
1,200 PIECES
an Hour
Instead of 60

Just one of the many examples that show how

Paasche

Automatic Aircoating and Air-finishing Equipment is giving manufacturers finer finishes, in less time and at lower cost.

Send today for Paasche New Automatic Equipment Bulletin

This unit increased production from 60 to 1200 pieces an hour—used less material and gave a finer coating through evener distribution.

Over 25 years of experience have proven to us that automatic aircoating equipment can always do the job better, quicker and at a saving. Let our Engineering Department offer suggestions as to how your coating and finishing problems can be solved to your greater satisfaction. Its service is free.

Paasche Airbrush Co.
1917 Diversey Parkway Chicago

How recently have you checked your cleaning methods?

During recent years there has been extensive scientific investigation of detergent or cleaning processes. Methods of industrial cleaning have progressed greatly. Old and obsolete methods have been displaced.

Since our establishment in 1921, we have published more technical data and up-to-date information on metal cleaning operations and methods than all other cleaning manufacturers combined. This is at your disposal.

Write us today. You will receive the latest available information, thus enabling you to check your present methods and take advantage of existing savings where possible.

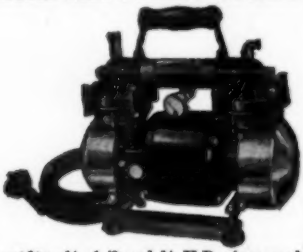
Magnus Chemical Co.
40 South Avenue Garwood, N. J.

Magnus
CHEMICAL COMPANY

NEW AIRFLO

Portable Spray Painting Unit

OPERATES WITHOUT OIL! . . MORE AIR . . LESS UPKEEP!



5 outfits—¼, 1/3 and ½ H.P. sizes, each one expressly designed to suit your finishing problem. Extremely portable. Air-cooled G-E motor. More pressure—more volume. Upkeep 50 per cent lower.

New No. 17 Crown Gun

A splendid finishing gun. Many high-priced features. Low cost. Send for details on this new equipment.

CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd. Los Angeles, Calif.

into the wood by the feed rolls. The magazine storage table for slats is built of steel, and is 12-ft. long. Pressure on the ends of the slats pushes them over the vacuum cleaner and into the feed rolls. The slats travel over a highly polished table and through a bronze-lined control gate. All moving parts of this table operate on self-lubricated, splash-proof rollers to guard the stock from scratches, burns, grease, and marks that would be caused by a friction roll feed. The table can be supplied with either an automatic-feeding device or foot feed.

This machine will coat strips at a considerable saving in materials, and should turn out about 42,000 lineal feet per eight hours. It is fully guaranteed by the builders, who have been building coating equipment for the past 50 years.

To handle stock from this machine, and in other departments of a Venetian blind plant, three types of trucks have been designed and perfected; one is for wet material that is to be stored to dry, a second will carry stock vertical, and a third is to be used for heavy duty work.

Rubber Protective Coatings

Kelsan Products of St. Clair, Mich., was revealed this week as the developers of the new process which makes possible the use of rubber protective coatings applied in liquid form.

For industrial applications, the development opens up new possibilities in many directions. It is reported, for instance, that one manufacturer has been experimenting with the possibility of coating a complete automobile body with Kelsanite as it comes out of the paint shop, leaving it on while the body goes over the final assembly line, etc.

Consideration has been given furthermore to leaving the coating on during road test, shipment or driveaway, etc., removing it only just before delivery of the car to the final

purchaser. In this way the body finish would be protected from the time that it is applied, until the car is delivered. Removal of the coating is quite simple, involving merely the loosening of an edge, and then pulling the whole coating off in one sheet, like a cellophane wrapper.

In the masking of automobiles for lacquering, the use of sprayed Kelsanite permits a reduction in material costs as well as even greater savings in time required.

Another important application of Kelsanite is in the protection of finished parts and equipment for shipment or storage. Parts can be

Showing how Kelsanite protective coatings are readily stripped off when no longer needed. . . . the application of Kelsanite to the packaging of piston pins for distribution to the automotive service trade.

sprayed or brushed with, or dipped in Kelsanite, thereby sealing the surface against air and moisture.

As a rust preventor in storage of metal parts, Kelsanite coated parts have been subjected to over 150 hours saltspray tests without showing any signs of corrosion.

Kelsanite, it is said, also acts as a cleaning compound, absorbing any dirt or moisture on the surface being coated. When removed, it thus leaves the surface clean and dry.

In the plating of metal parts Kelsanite has a definite field as a masking compound to prevent deposition of metal except where desired. Following the plating operation, the coating is then readily stripped off.

MARVELOUS NEW PAINT SPRAY GUN

Handles all types paint, lacquer, etc., especially the new synthetic enamels. Lighter in weight, widest spray, perfect atomization; air purifiers, 5 and 10 gallon pressure outfits, accessories, etc.

Write for Catalog.

The Alexander Milburn Company 1402 W. Baltimore St. Baltimore - Maryland

STANDARDS OF THE INDUSTRY

PERMACEL The *standard* paper masking tape . . . sticks in all weathers . . . razor-sharp edges.
JONFLEX The *standard* light, fine-woven cloth tape . . . sticks in all weathers . . . razor-sharp edges.
INDUSTRIAL The *standard* heavy, coarse-woven cloth tape . . . sticks in all weathers . . . razor-sharp edges.

Send for samples. Sizes ½" to 36" wide in 60-yd. rolls.

THE REVOLITE CORP.
A Subsidiary of Johnson & Johnson
NEW BRUNSWICK, NEW JERSEY

ALUMINUM VEHICLES

for SPECIAL INDUSTRIAL DIPPING and BAKING APPLICATIONS

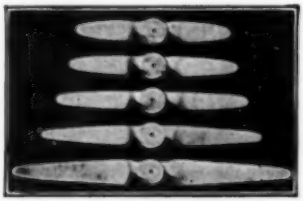
THOMPSON Aluminum Vehicles for these special applications are, of course, custom tailored to individual requirements. If you have such a problem we will be glad to put our special knowledge in this field at your disposal.

THOMPSON & COMPANY
Since 1847

Industrial and Technical Paints, Enamels and Varnishes

P. O. Box 557 N. S. Pittsburgh, Pa.

Aeroplane Type Exhaust Fan Propellors



16-in. (requires	¼ hp. motor at 1725 rpm.)	$4.00
18-in. (requires	¼ hp. motor at 1725 rpm.)	4.50
20-in. (requires	¼ hp. motor at 1725 rpm.)	5.00
24-in. (requires	½ hp. motor at 1725 rpm.)	6.00
28-in. (requires	½ hp. motor at 1725 rpm.)	7.00
30-in. (requires	½ hp. motor at 1725 rpm.)	8.00
36-in. (requires	¾ hp. motor at 1725 rpm.)	12.00

Made of Nickel Alloy Aluminum
Machined — Finished — Balanced

Guaranteed in every respect.

Send for descriptive circular and new low price on Complete Fans or parts to make any size exhaust or ventilating fan.

UNIVERSAL MFG. CO.
324 W. 10th St. Indianapolis, Ind.

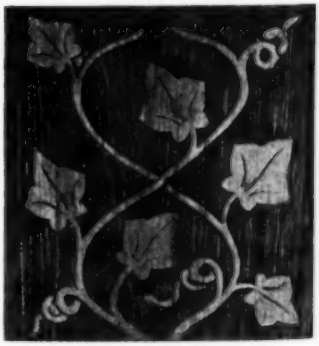
Stencil Sandblasting on Wood Surfaces

Some very attractive ornamental effects are secured on wood surfaces by the use of stencil sandblasting.

Man at work with complete sandblast and stencil equipment, including metal cabinet.

Equipment and methods for this work are furnished by The Macleod Co., 2232 Bogen St., Cincinnati, Ohio.

According to information supplied by this company, the type of outfit to be recommended all depends upon the size of work. The accompanying illustration shows a compact Macleod cabinet arranged with small turntable so that the work can be moved about, giving the operator a better chance to sandblast as the work progresses. Parts that are not



An example of stenciled sandblasting on a wood surface.

to be etched by the blast of abrasive are covered with a sandblast composition on which the design has been cut out—or, where a number of similar pieces are to be etched, a special stencil is used.

Beautiful designs can be made with the sandblast, although the kind of wood must be given careful consideration. . . . A smaller shaping pencil is also used for the very fine work, which is usually done as a separate and final operation. The sandblast is also used to make surfaces appear very old, such as required for some antique furniture.

Synthetic White Baking Enamel

A non-yellowing synthetic which covers perfectly in one coat on bare metal. When baked at 250°F. for two hours it produces a film that is exceptionally hard and extremely elastic; will not yellow when baked at this heat, and it dries with a high luster. This enamel is also made to air dry if desired; a product of The Gilbert Spruance Co., Philadelphia, Pa.

One-Coat Toy Enamels Are Non-Poisonous

A new line of toy enamels is announced by Valentine & Co., 386 Fourth Ave., New York, N. Y., and 12 Emily St., Cambridge, Mass. These finishes were developed to fill the demand for low-priced economical materials to give a one-coat finish that will stand out, even when applied to bare wood. The items include:

1) Bright air-dry toy enamels for wood.

2) Bright air-dry and bake toy enamels for metal.

3) Bright lacquer enamels for wood and metal.

4) Clear gloss and flat varnishes.

M S A Comfo - Respirator
(Reg. U. S. Pat Off.)

Sure protection against microscopically fine dust . . . and a trifle over 5 ounces in weight.

M S A Comfo-Respirators, officially approved by U. S. Bureau of Mines, combine exceptionally low breathing resistance and light weight with easy, snug-fitting adjustment and absolute non-interference with goggles, etc. Men CAN and DO wear them all day long without complaint. Equally important, Comfos provide the best available protection against all industrial dusts, the longest service life per filter and the lowest filter replacement cost. Investigate these proved dust respirators — write for the M S A Comfo-Respirator Bulletin — No. CR-1.

MINE SAFETY APPLIANCES CO.
Braddock, Thomas & Meade Sts.
PITTSBURGH PENNA.

Behlen's
PAD OVER
A Varnish
. . . Gloss or Dull . . . Simply wipe on with a cloth.
Resistant to
Alcohol, Hot Water, Pressmarks, Mild Acids and Alkalies.
For Wood or Metal
Sold in Pint, Quart and Gallon Cans.
Write us
Manufactured by
H. Behlen & Bro.
10 Christopher St., New York City
Hard Wood Finishing Specialties since 1883

5) Gloss and flat lacquers.

These products have excellent gloss, opacity, and are remarkably economical to use. The enamels and varnishes set up to handle in one hour and dry thoroughly hard overnight. Particular emphasis is placed on one of the outstanding virtues of these toy enamels — they are non-poisonous.

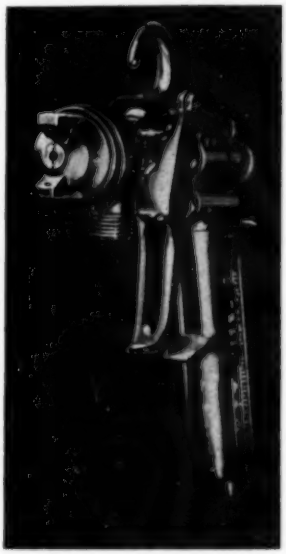
Protects Finishers' Hands

A new vanishing cream which forms an invisible glove, protecting the skin against dirt, paint and grease, has recently been announced by the Finishes Division of E. I. du Pont de Nemours & Co. The new product, "Pro-Tek," is not a soap, but a cream compounded primarily for protection, and it is claimed to be entirely harmless and non-irritating to the skin. When rubbed on the hands, the cream apparently disappears, leaving the hands dry and free from any feeling of stiffness or greasiness. "Pro-Tek" is being offered as one of the No. 7 Line products, through drug stores, hardware and paint stores, and by auto accessory dealers.

Binks' Spray Gun Nozzle Head

New improvements in the nozzle head of the famous Thor Model 2 spray gun have been announced by the Binks Mfg. Co., 3114 Carroll Ave., Chicago.

As shown in the illustration, there are now four auxiliary holes on either side of the center jet, from which both air and material flow. The four auxiliary air jets (formerly there were only two) travel parallel to the center jet, reinforce it, and enable it to maintain high resistance to the side jets. This permits the greatest possible velocity through the center port without having to increase the diameter of it, which would materially impair atomization.



Improved nozzle has more air jets.

Moreover, with this new added strength on the central stream, the velocity of the side jets can be increased, which results in improved atomization without destroying the uniformity of the spray pattern.

This new improvement is the result of constant research and experimentation to improve spray painting, as made by the Binks' research laboratories.

Solvent for Synthetics, Lacquers and Varnishes

The Naval Stores Dept. of Hercules Powder Co., Wilmington, Del., announces "Hercosol No. 80," a special varnish and lacquer solvent that is made under a patented process from pine oil. It consists chiefly of terpene hydrocarbons and ketones.

Hercosol No. 80, like Hercosol No.

5, has been used chiefly as a special, high-boiling solvent for nitrocellulose lacquers. When used in small quantities in brushing lacquers, dipping lacquers, and lacquer enamels, it imparts greater flexibility, better luster, and better flow. It is an excellent wetting and dispersing agent and its use is recommended in varnish and lacquer-enamel grinding mediums. The addition of 1% or 2% will produce excellent results. Haze caused by spraying lacquers in moist atmospheres is greatly lessened or entirely eliminated by the addition of small quantities of Hercosol No. 80 to the lacquer diluent. Most gums and resins used in lacquers and varnishes are readily soluble in Hercosol No. 80, and its use will often prevent gum blushing and aid in keeping resins in solution. The fact that Hercosol No. 80 is non-hydroscopic permits its use with any solvent mixture. Unlike most high-boiling lacquer solvents, Hercosol No. 80 has a colloiding action on nitrocellulose and readily dissolves gums and resins.

Practical tests have shown Hercosol No. 80 to be a good solvent and anti-skin agent in synthetic resin varnishes and enamels. In addition, it is recommended to improve leveling, grinding of pigments, and gloss. The addition of 1% to 2% of Hercosol No. 80 to the volatile portion is recommended. It is important not to use too much, or the drying of the film will be retarded; however, the small amounts recommended are sufficient to yield the desired results.

Amodec Furniture to Appear

Amodec furniture will be shown for the first time at the American Furniture Mart during the summer market opening July 8, Leo Jiranek, Amodec designer, announces. Heretofore Amodec displays have been held in New York and Chicago hotels. The Thomasville Chair Co. and Finch Furn. Co., Thomasville, N. C., will display Amodec dining room, bedroom and living room furniture. A new line of Amodec mirrors, manufactured by the Nurre Companies, Bloomington, Ind., will be shown; also an upholstered and occasional living room line, produced by the International Furn. Co. Other lines of Amodec designs will also be ready for the July Market.

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EDITORIAL

Industrial Design

"To define the present purpose of product design," states Harvey W. Corbett, a leading architect of New York, and designer of the Industrial Arts Exposition which was recently held for a period of one month in New York City, "if the object is intended to last a long time, then the designer must be so guided, and make sure that it will have an attractive appearance not only today but throughout the years. If, on the other hand, the object is only of fleeting duration, then it should be designed with reference to prevailing ideas of appearance, which the designer realizes may not be lasting but will have immediate public appeal. . . . Practical use and function dominate the designer's work. The bad logic of the past 30 or 40 years—the thinking that design is something added to, stuck on, or painted over the practical functional form—has been largely abandoned."

"Competitive merchandising forces manufacturers to give serious attention to design. . . . The trained designer must know the several equally practical ways of accomplishing a given functional result. He must understand his problem intimately; he must know his materials, his processes of manufacture, and the economies effected through understanding of these processes."

What Is Air-Conditioning?

Air-conditioning is a term that many have heard but few understand. To define it in simple language, we might say air-conditioning is a process which warms air when it is too cold, cools it when too hot, dampens it when too dry, dries it when too wet, cleanses it when laden with dirt or dust, and circulates it at a controlled rate to replace foul air with fresh air.

Many wonder how air-conditioning can be made applicable both to huge buildings and small shops or rooms. The answer is two different types of air-conditioning systems. More generally known, and used for large installations, is what engineers call the central system. All equipment for this type is located at a central point,

from which conditioned air is distributed through ducts to various parts of the building.

Another type, particularly suited for application in existing buildings and for the smaller spaces, is known as the unit system. The name almost tells the story. The air-conditioning job is performed by small units located in the areas where the conditioned air is desired. Some of these units are not much larger than the average hot water radiator. All mechanism is enclosed in an attractive casing which can be furnished to harmonize with its surroundings.

How does it work? Well, omitting technicalities and engineering terms, here's the answer:

Air is generally warmed by passage over steam or water-heated surfaces. It is cooled by movement over refrigerated surfaces. To dampen it (engineers call it humidification) the air is sent through passages where moisture is supplied by sprays. Drying is accomplished by lowering the temperature of the air, thus condensing out the moisture. To cleanse the air, either mechanical filters or water washing is used. Circulation is provided by motor driven blowers or fans.

Inside the cabinet of a typical modern unit air-conditioner is assembled the equipment that provides proper air-conditioning the whole year 'round. Air from the room is pulled into the unit through openings at each end of the cabinet. Outside air, if desired, is brought through openings in the back of the unit by means of a duct.

Across the top is the heating unit. Finned heating coils provide ample heat for the winter months, and make other heating systems unnecessary. Below the heating unit is the cooling coil which is used during the summer months. With the refrigerant in these coils at about 40° F., air passing through is cooled very rapidly.

These cooling coils also, in the summer, serve to reduce the humidity. When moisture-laden air is sent up through these chilled coils, the moisture will be condensed and left upon the plates. Thus, condensed moisture falls into the drip pan and cool dehumidified air is discharged into the room.

In the winter, it often is desirable to add moisture, or to humidify the air. This is accomplished by two water sprays in the unit. Water is atomized in the path of the incoming air and is picked up and absorbed as vapor.

The filter is a part of the outside casing and forms an attractive and protective top for the unit. It removes all dust and dirt from the air to be discharged into the room.

Air-conditioning today is in the same position that the automobile was when the public ceased to look upon it as a freak contraption and began to see its practical value. In the past few years, it has been proved by numerous installation in stores, restaurants, offices and certain factory departments that air-conditioning equipment is a profitable investment.

Industrial Arts Exposition

At the Industrial Arts Exposition, held recently in New York City, products of leading manufacturers in the country were exhibited. Air conditioners, oil burners, furnaces, refrigeration equip-

ment and other furnishings for modern home basements, laundries and kitchens were finished in enamel, the leading colors being green in medium and dark shades, and ivory in light and deep shades. Red was used considerably as an accent color. White was in evidence with and without accent tone edgings of black or yellow. Two-tone finishes in green showed up attractively, the darker color being used for trimming and ornamental bands.

Radios in streamlined designs appeared in beautiful walnut finishes, the surfaces being hand rubbed to a mirror-like luster. Butt walnut veneers were used effectively, the figured and wavy effects being generally finished in a lighter tone than the solid structural or straight-grained parts.

Many products made of modeled plastic such as Bakelite and marblette were displayed. These were in colors and highly polished.

Gas ranges of the new table-top type were finished in sun-tan and ivory, green and ivory, all white, white with black base and trimmings, and ivory with black trimmings.

In furniture, modern and ultra-modern were much in evidence, with fine woods and fine finish furnishing the decorative side.

Two model kitchens were shown, one in red and the other in yellow.

Spray Booth Fires; What Causes Them

Fires which occur in spray booths result from five principal causes: (1) Broken electric lamps and other electrical defects; (2) cleaning interior of booths, fans and motors with highly flammable solvents; (3) accumulation of deposits in the tubes and vent pipes, resulting from neglect to clean them frequently; (4) defective fans and motors used for ventilating the booths; and (5) poorly designed and guarded vent tubes.

The severity of the hazard obviously depends largely upon the cleanliness maintained, the quantity of finishing materials consumed (reflecting the magnitude of the operations), the continuity of the spraying operations, the character, design and maintenance of the equipment, and the nature of the adjacent occupancies that may be exposed by fire in the spraying operations.

The above facts are revealed in the 1935 report of the National Fire Protection Association's Committee on Manufacturing Hazards. The report was read and given consideration at the Annual Meeting in Atlanta, Ga., May 13 to 16, 1935.

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